

## ABSTRACT

A first rotor (2) rotating with the first rotation shaft (5) and having magnetic poles, and a second rotor (3) rotating with the second rotation shaft (4) and having a different number of magnetic poles to the first rotor (2) are provided. The first rotation shaft (5) and the second rotation shaft (4) are disposed co-axially and the first rotor (2) and the second rotor (3) are disposed in series in an axial direction. A stator (14) with a plurality of coils (16,16A,16B) is provided on an outer side of the first rotor (2) and the second rotor (3). The plurality of coils (16,16A,16B) generate a rotating magnetic field in synchronism with a magnetic field of the first rotor (2) due to the application of a first alternating current and generate a rotating magnetic field in synchronism with a magnetic field of the second rotor (3) due to the application of a second alternating current. The current control device (112, 115) drives the first and second rotors (2, 3) independently by supplying a composite current comprising the first alternating current and the second alternating current to the coils (16,16A,16B).